

CLAIMS

1. A control system (5) for controlling the movements of a plurality of mechanical units (1,2,3), **characterized** in that the control system further comprises:
- a program means comprising a plurality of mechanical unit programs (6,7,8), each comprising program instructions including movement instructions for at least one of said mechanical units,
 - a plurality of path planners (9,10,11), each path planner adapted to receive instructions from at least one of said mechanical unit programs and on basis thereof determine how the mechanical unit should move in order to be able to execute the movement instruction, wherein at least one of said path planners is adapted to receive instructions from at least two of said mechanical unit programs and on basis thereof determine how the mechanical units should move in order to synchronize their movements, and
 - switching means (22) adapted to switch a mechanical unit program from one path planner to another, whereby the movements of the mechanical units are synchronized when their mechanical unit programs are connected to the same path planner and the movements of the mechanical units are independent when their mechanical unit programs are connected to different path planners.
2. A control system according to claim 1, **characterized** in that each mechanical unit program is connected to one of said path planners, and said switching means is adapted to upon command disconnect the mechanical unit program from the connected path planner and to connect the mechanical unit program to another path planner.
3. Control system according to claim 1 or 2, **characterized** in that the control system (5) comprises a central data

storage means (16) and that at least one mechanical unit (1,2,3) is arranged to transmit data concerning its position and/or status to the central data storage means (16).

- 5 4. Control system according to claim 3, **characterized** in that said at least one mechanical unit (1,2,3) is arranged to transmit position and/or status data to the central data storage means (16) when it is stationary i.e. when it has stopped moving.
- 10 5. Control system according to claim 3 or 4, **characterized** in that said at least one mechanical unit (1,2,3) is arranged to transmit position and/or status data to the central data storage means (16) while it is moving to a new location.
- 15 6. Control system according to claim 4 or 5, **characterized** in that said position data comprises information concerning the displacement and/or rotation of said at least one mechanical unit's (1,2,3) coordinate system (4).
- 20 7. Control system according to any of the preceding claims, **characterized** in that the central data storage means (16) is arranged so that data stored therein is accessible by an operator, a mechanical-unit program (6,7,8) or the path planning means (9,10,11).
- 25 8. Control system according to any of the preceding claims, **characterized** in that the central data storage means (16) is arranged so that data stored therein is accessible locally and/or remotely via a network such as the Internet.
- 30 9. A method for controlling the movements of a plurality of mechanical units (1,2,3), comprising:

- storing a plurality of mechanical unit programs (6,7,8), each comprising program instructions including movement instructions for one of said mechanical units,
 - 5 - connecting said mechanical unit programs to a plurality of path planners so that at least two of the mechanical unit programs are connected to different path planners, wherein each of said at least two path planners receives instructions from the connected mechanical unit program and on basis thereof determines how the mechanical unit
10 should move in order to be able to execute the movement instructions of the program,
 - switching at least one of the mechanical unit programs to another path planner so that more than one of the mechanical unit programs are connected to the same path
15 planner, which receives instructions from the connected mechanical unit programs and on basis thereof determines how the mechanical units should move in order to synchronize their movements,
- 20 10. Method according to claim 9, comprising connecting each mechanical unit program to one of said path planners, and upon command disconnecting at least one of the mechanical unit programs from the connected path
25 planner and to connect the mechanical unit program to another path planner.
- 30 11. Method according to claim 9 or 10, comprising storing position and/or status data from at least one of the plurality of mechanical units (1,2,3) in a central data storage means (16).
- 35 12. A computer program containing computer program code means for making a computer or processor execute the steps of the method according to any of claims 9 - 11.

13. A computer readable medium, having a program recorded thereon, where the program is to make a computer perform the steps of any of the claims 9 - 11, when said program is run on a computer.

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14. Use of a control system (5) according to any of claims 1-8, a method according to any of the claims 9 - 11 or a computer program according to claim 12 in a system comprising a plurality of mechanical units (1,2,3), namely robots and/or external axes, which are programmed to execute at least one task where at least two of said mechanical units move synchronously.

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